

WHAT IS CLAIMED IS:

1. An isolated and purified nucleic acid molecule that encodes protease EOS, and functional derivatives thereof.

5 2. The isolated and purified nucleic acid molecule of claim 1, having a nucleotide sequence selected from a group consisting of: (SEQ.ID.NO.:1), (SEQ.ID.NO.:8) and functional derivatives thereof.

10 3. The isolated and purified nucleic acid molecule of claim 1, wherein said nucleic acid molecule is selected from a group consisting of cDNA, RNA, and genomic DNA.

15 4. An expression vector for expression of protease EOS protein in a recombinant host, wherein said vector contains a nucleic acid sequence encoding protease EOS protein, and functional derivatives thereof.

20 5. The expression vector of claim 4, wherein the nucleic acid sequence encoding protease EOS protein is selected from a group consisting of (SEQ.ID.NO.:1), (SEQ.ID.NO.:8), nucleotide sequence encoding the protein of SEQ.ID.NO.:7, and functional derivatives thereof.

25 6. The expression vector of claim 4, wherein said nucleic acid molecule is selected from a group consisting of cDNA, RNA, nucleic acid sequence encoding SEQ.ID.NO.:7, and genomic DNA.

7. A recombinant host cell containing the expression vector of claim 4.

30 8. The recombinant host cell of claim 7, wherein said expression vector contains a nucleotide sequence selected from a group consisting of (SEQ.ID.NO.:1), (SEQ.ID.NO.:8), nucleic acid sequence encoding SEQ.ID.NO.:7, and functional derivatives thereof.

9. The recombinant host cell of claim 7, wherein said nucleotide sequence is selected from a group consisting of cDNA, RNA, nucleic acid sequence encoding SEQ.ID.NO.:7, and genomic DNA.

5 10. A protein in substantially pure form that functions as protease EOS protein.

10 11. The protein according to claim 10, having an amino acid sequence selected from a group consisting of (SEQ.ID.NO.:7), (SEQ.ID.NO.:9) and functional derivatives thereof.

12. A monospecific antibody immunologically reactive with protease EOS protein.

15 13. The antibody of Claim 12, wherein the antibody blocks protease activity of the protein.

14. A process for expression of protease EOS protein in a recombinant host cell, comprising:

20 (a) transferring the expression vector of Claim 4 into suitable host cells; and
(b) culturing the host cells of step (a) under conditions which allow expression of the protease EOS protein from the expression vector.

25 15. A method of identifying compounds that modulate protease EOS protein activity, comprising:

(a) combining a modulator of protease EOS protein activity, protease EOS protein, and a labeled substrate; and
30 (b) measuring a change in the labeled substrate.

16. The method of claim 15 wherein the labeled substrate is selected from the group consisting of fluorogenic, colormetric, radiometric, and fluorescent resonance energy transfer (FRET).

17. A compound active in the method of Claim 15, wherein said compound is a modulator of protease EOS serine protease activity.

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18. The compound of Claim 17, wherein said compound is an agonist or antagonist of protease EOS serine protease activity.

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19. The compound of Claim 17, wherein said compound is a modulator of expression of protease EOS serine protein.

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20. A method of treating a patient in need of such treatment for a condition that is mediated by protease EOS, comprising administration of the compound of Claim 17.

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21. A kit comprising the nucleic acid sequence selected from the group consisting of SEQ.ID.NO.:1 and SEQ.ID.NO.:8, nucleotide sequence encoding SEQ.ID.NO.:7, and fragments thereof.

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22. A kit comprising the serine protease EOS protein selected from the group consisting of SEQ.ID.NO.:7 and SEQ.ID.NO.:9, and fragments or derivatives thereof.

23. A pharmaceutical composition comprising the protein of claim 10.

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24. The pharmaceutical composition of claim 23 wherein said composition is a topical skin care composition.

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25. A non-pharmaceutical composition comprising the protein of claim 10.

26. The non-pharmaceutical composition of claim 25 wherein the formulation is selected from the group consisting of laundry

detergent, shampoo, hard surface cleaning compositions, and dishcare
cleaning composition.

27. A method of treating an imbalance of desquamation comprising
topical application of the composition of claim 24.